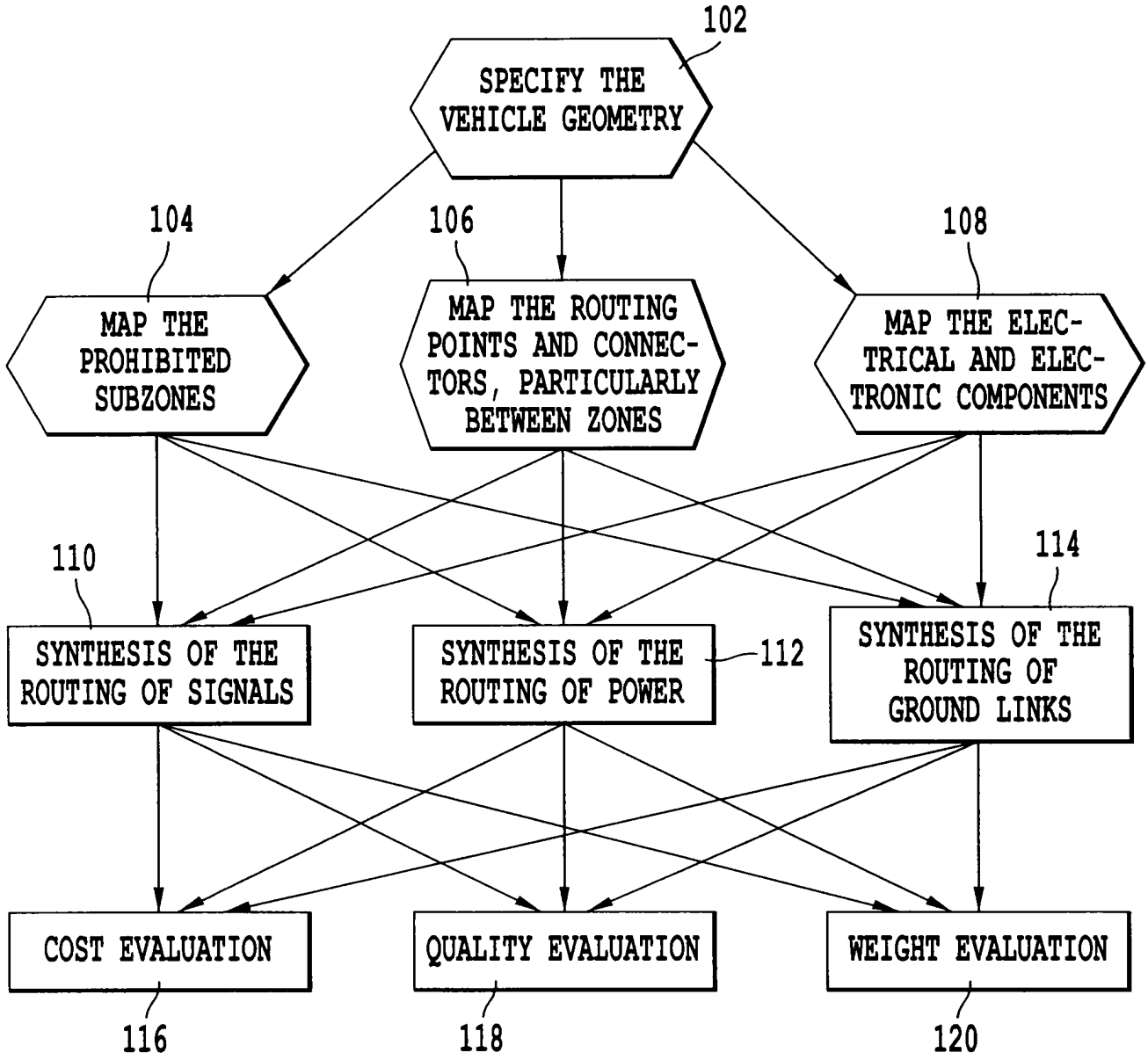
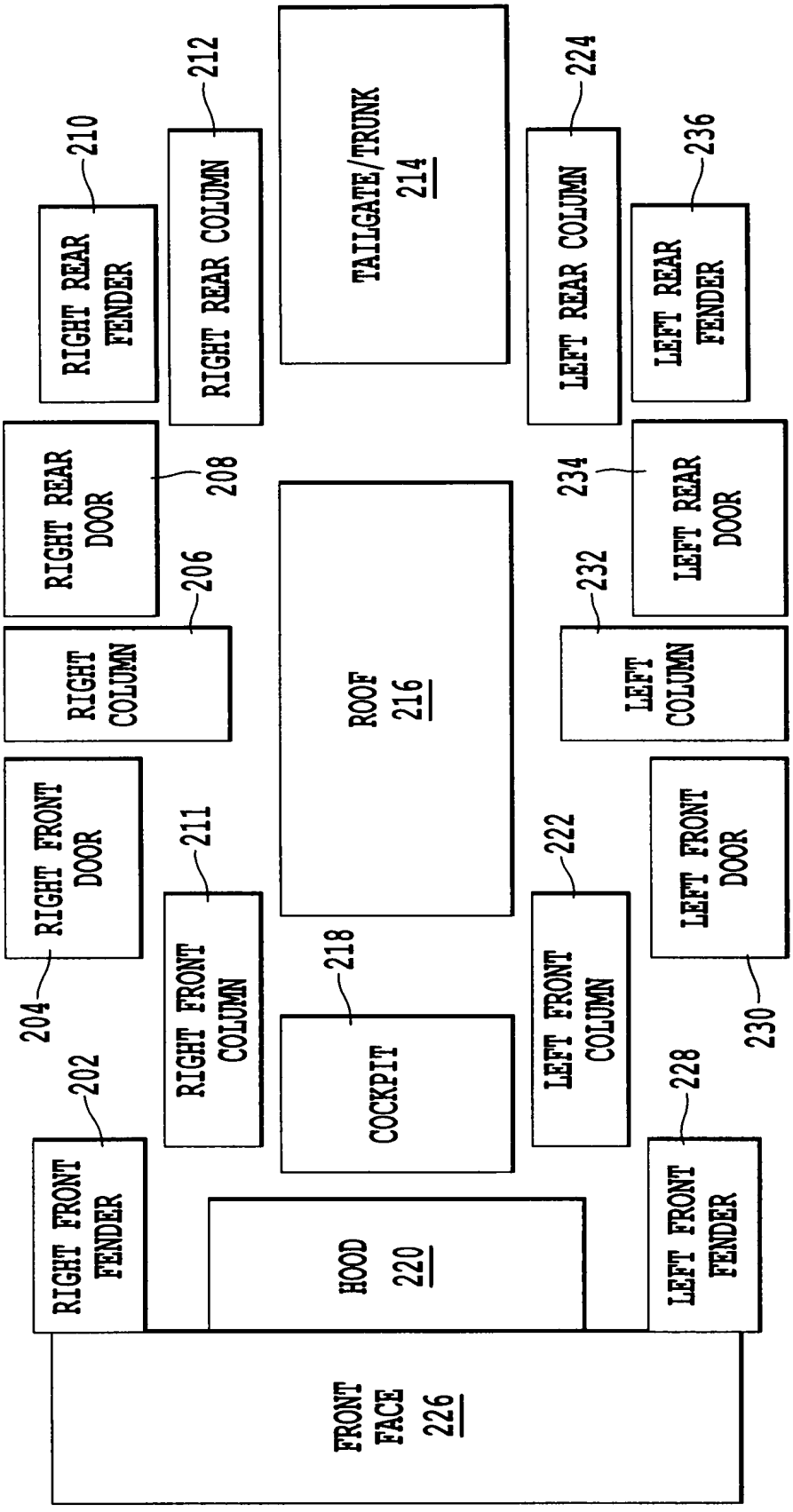
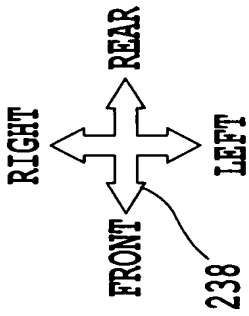

102
SPECIFY THE VEHICLE GEOMETRY
104
MAP THE PROHIBITED SUBZONES
106
MAP THE ROUTING POINTS AND CONNECTORS, PARTICULARLY BETWEEN ZONES
108
MAP THE ELECTRICAL AND ELECTRONIC COMPONENTS
110
SYNTHESIS OF THE ROUTING OF SIGNALS
112
SYNTHESIS OF THE ROUTING OF POWER
114
SYNTHESIS OF THE ROUTING OF GROUND LINKS
COST EVALUATION
QUALITY EVALUATION
WEIGHT EVALUATION
116
118
120

Fig. 1


RIGHT REAR FENDER
210
RIGHT REAR COLUMN
212
TAILGATE/TRUNK
214
LEFT REAR COLUMN
224
LEFT REAR FENDER
236
RIGHT REAR DOOR
208
ROOF
216
LEFT REAR DOOR
234
RIGHT COLUMN
206
LEFT COLUMN
232
RIGHT FRONT DOOR
204
RIGHT FRONT COLUMN
211
COCKPIT
218
LEFT FRONT COLUMN
222
LEFT FRONT DOOR
230
RIGHT FRONT FENDER
202
HOOD
220
LEFT FRONT FENDER
228
FRONT FACE
226


RIGHT
REAR
FRONT
LEFT
238

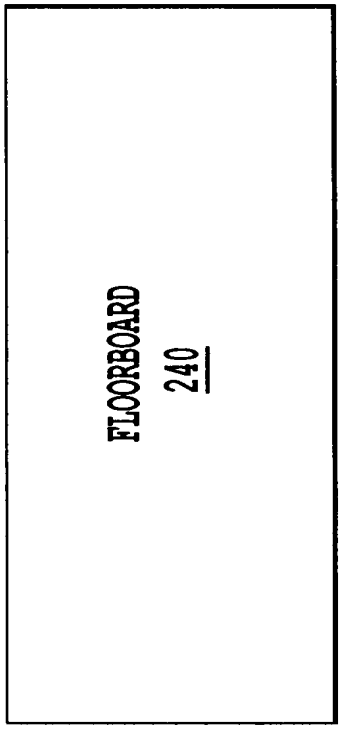

FLOORBOARD
240

Fig. 2

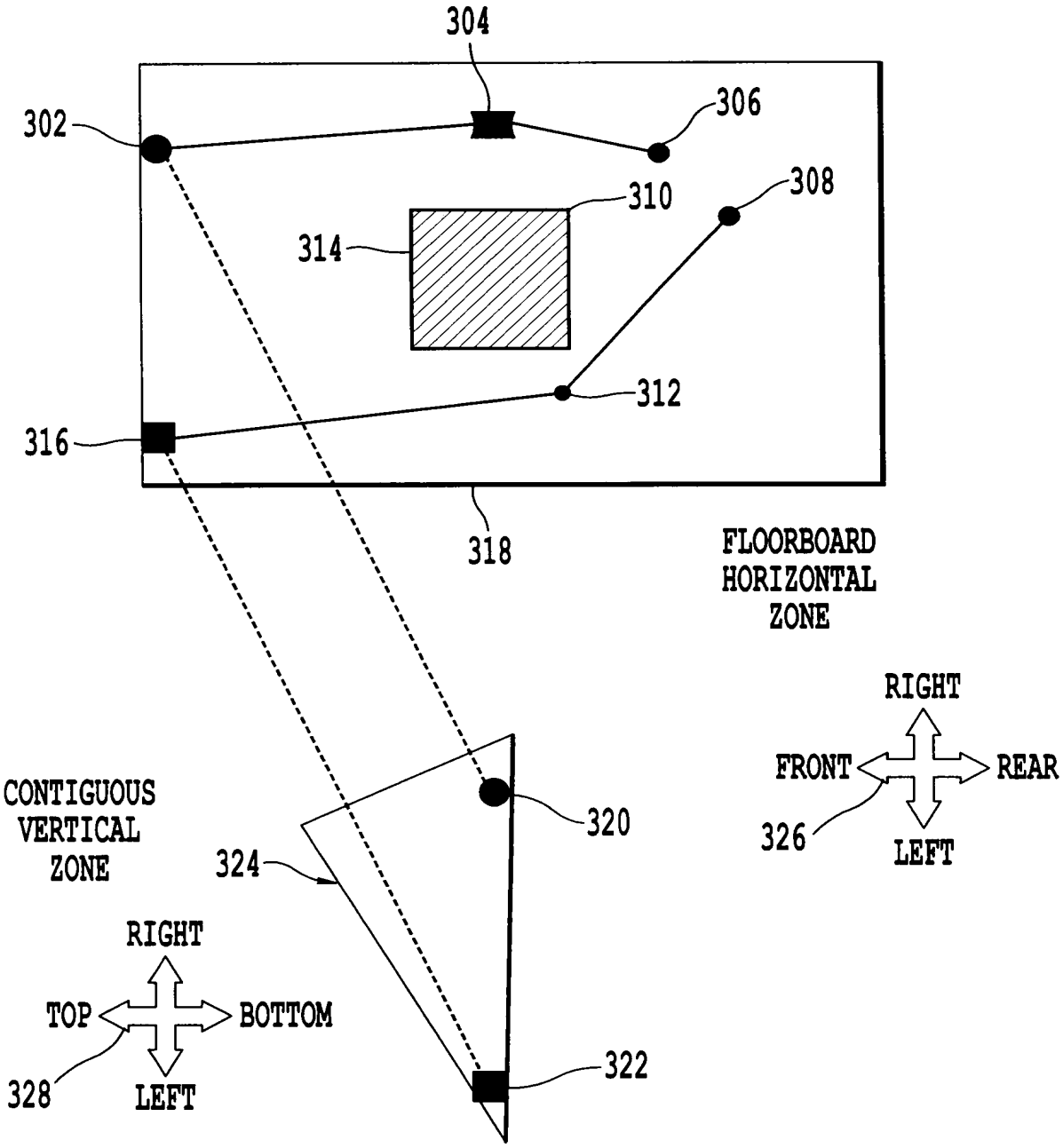

304
302
306
310
308
314
312
316
318
FLOORBOARD
HORIZONTAL
ZONE
RIGHT
FRONT
REAR
326
LEFT
CONTIGUOUS
VERTICAL
ZONE
320
324
RIGHT
TOP
BOTTOM
328
LEFT
322

Fig.3

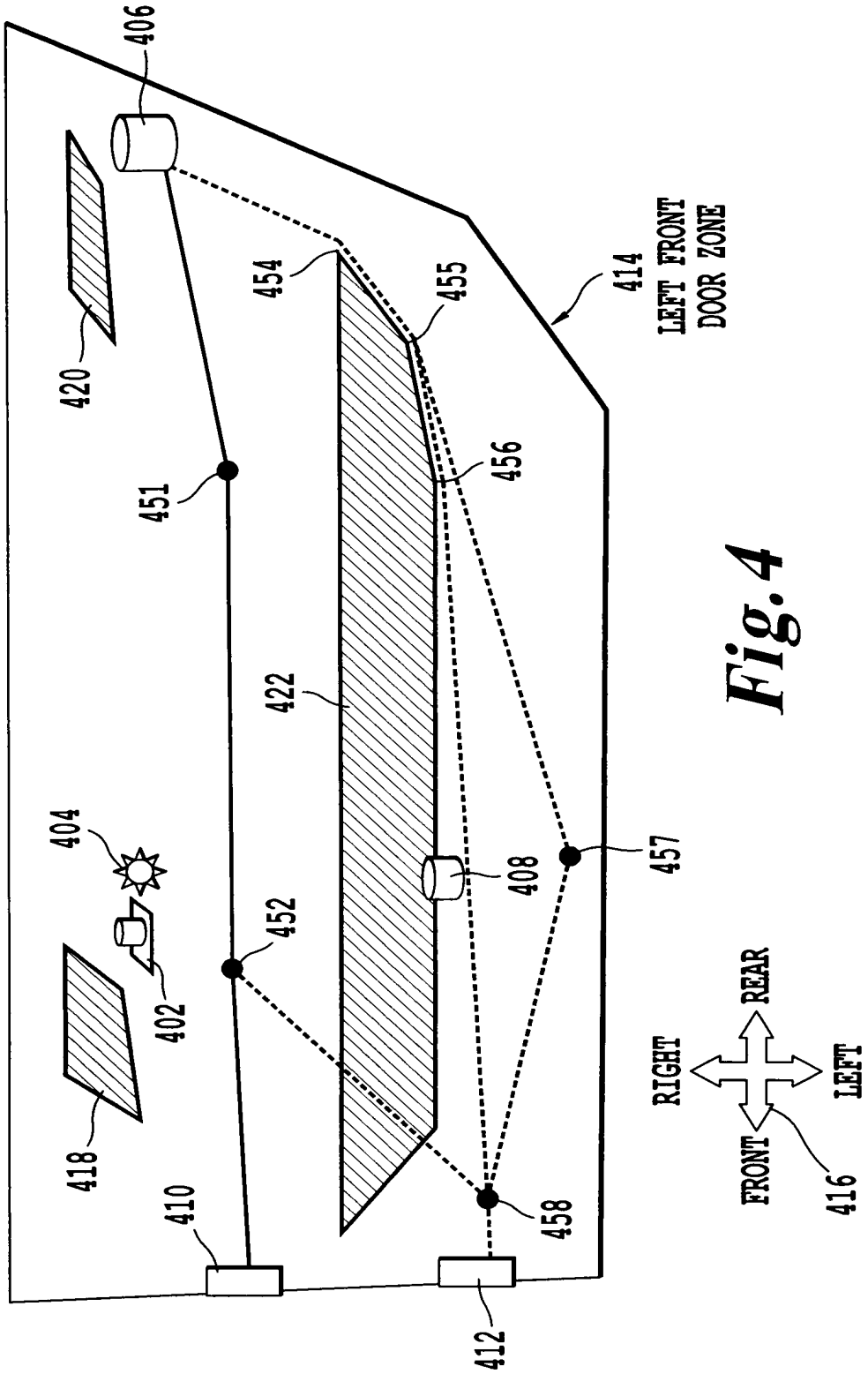

406
420
454
455
414
LEFT FRONT
DOOR ZONE
451
456
422
404
408
457
452
402
418
410
458
412
RIGHT
REAR
FRONT
LEFT
416

Fig. 4

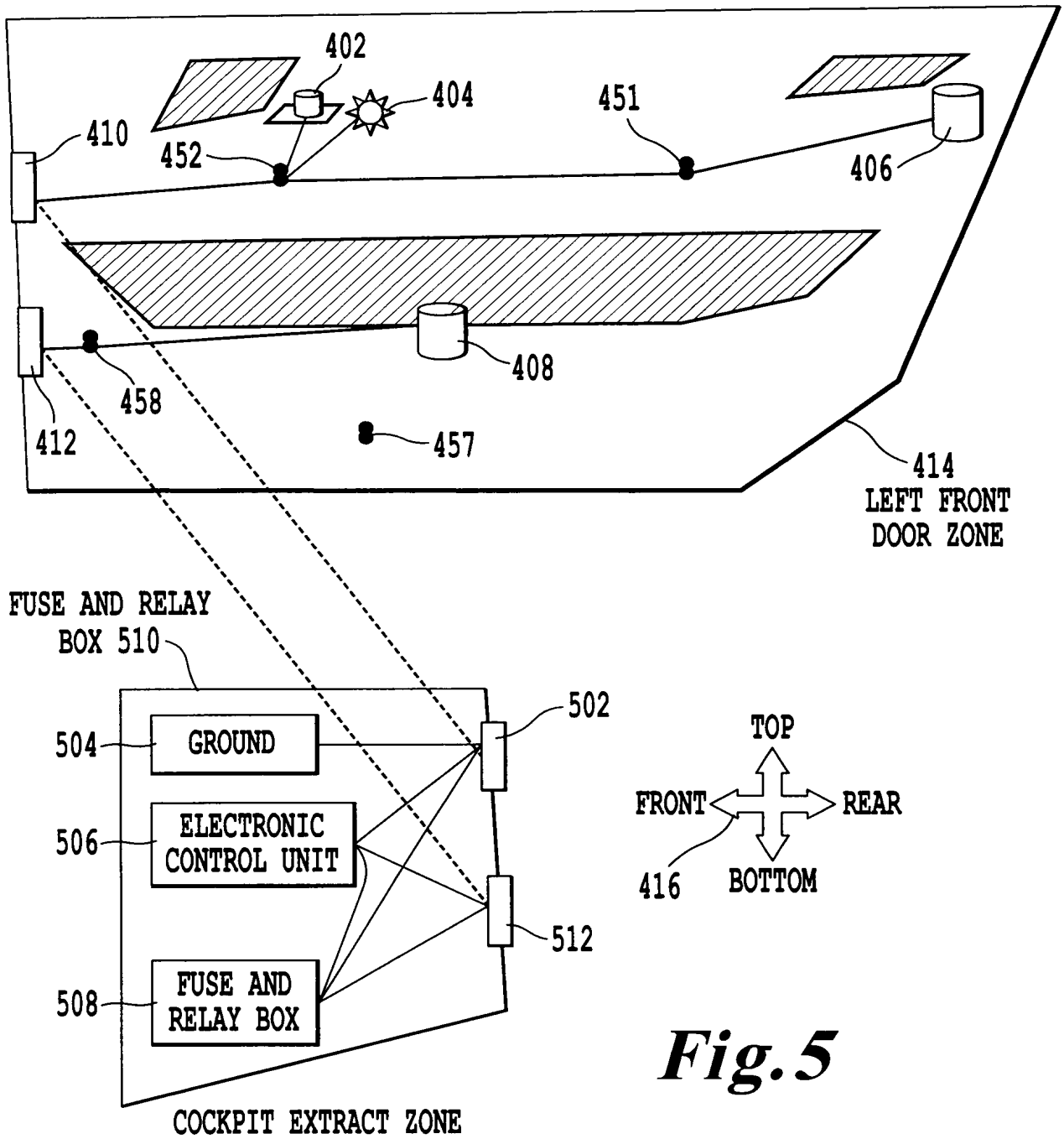

402
404
451
410
452
406
408
458
412
457
414
LEFT FRONT
DOOR ZONE
FUSE AND RELAY
BOX 510
502
504
GROUND
506
ELECTRONIC
CONTROL UNIT
512
508
FUSE AND
RELAY BOX
COCKPIT EXTRACT ZONE
TOP
FRONT
REAR
416
BOTTOM

Fig.5

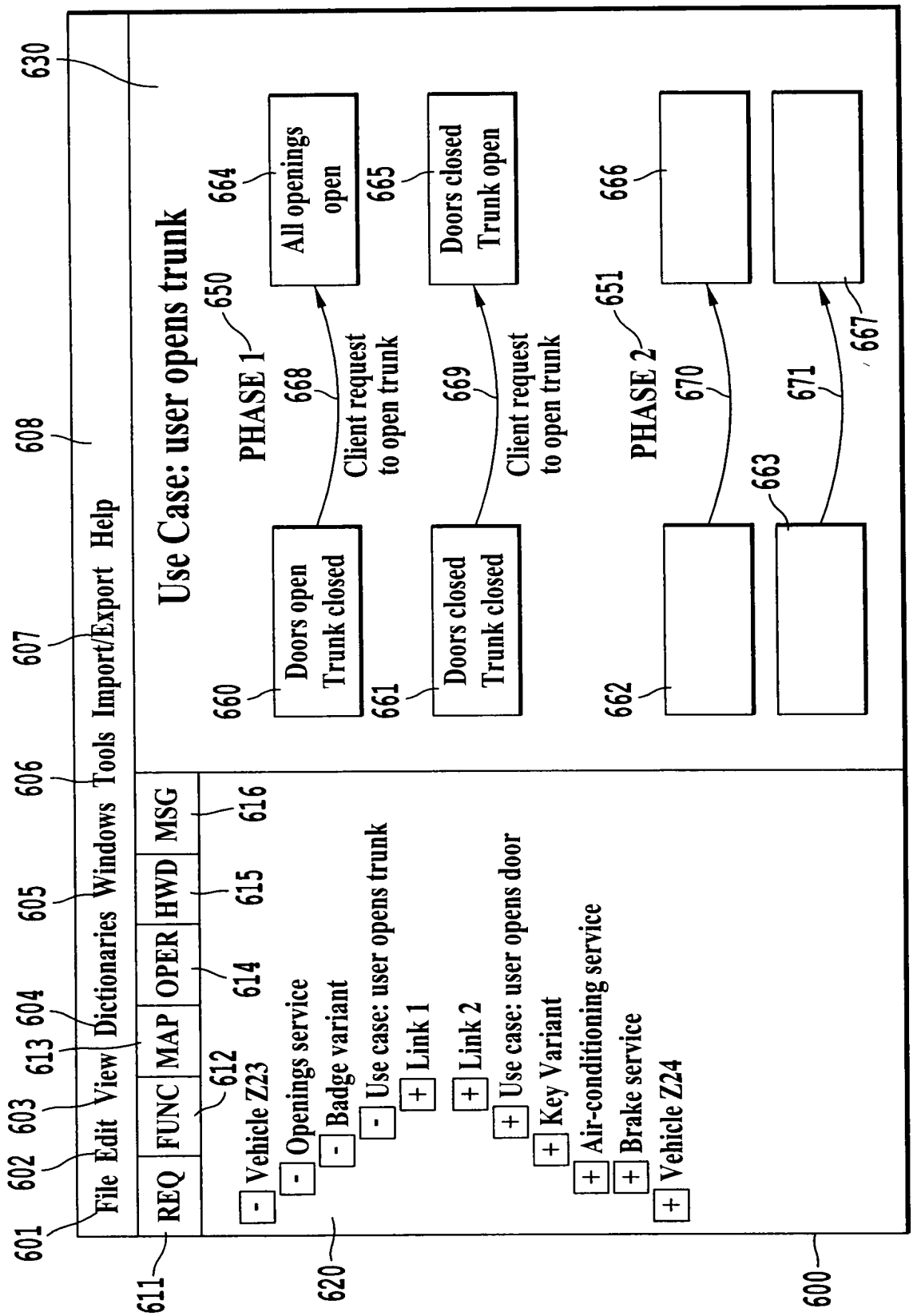

File Edit View Dictionaries Windows Tools Import/Export Help
REQ FUNC MAP OPER HWD MSG
- Vehicle Z23
- Openings service
- Badge variant
- Use case: user opens trunk
+ Link 1
+ Link 2
+ Use case: user opens door
+ Key Variant
+ Air-conditioning service
+ Brake service
+ Vehicle Z24
Use Case: user opens trunk
PHASE 1
PHASE 2
Doors open Trunk closed
Doors closed Trunk closed
All openings open
Doors closed Trunk open
Client request to open trunk
Client request to open trunk
600
601
602
603
604
605
606
607
608
611
612
613
614
615
616
620
630
650
651
660
661
662
663
664
665
666
667
668
669
670
671

Fig. 6

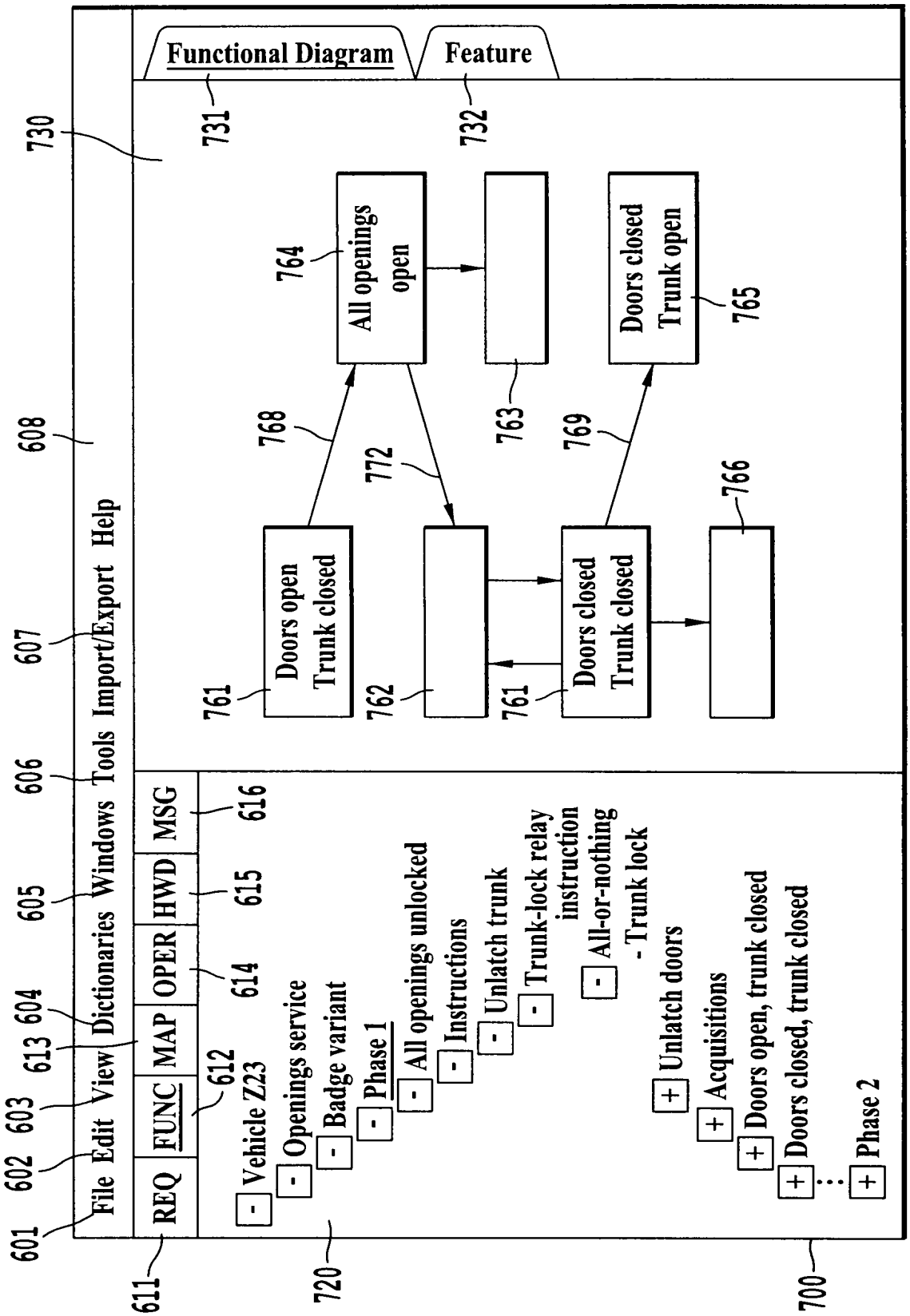

File Edit View Dictionaries Windows Tools Import/Export Help
REQ
FUNC
MAP
OPER
HWD
MSG
- Vehicle Z23
- Openings service
- Badge variant
- Phase 1
- All openings unlocked
- Instructions
- Unlatch trunk
- Trunk-lock relay instruction
- All-or-nothing - Trunk lock
+ Unlatch doors
+ Acquisitions
+ Doors open, trunk closed
+ Doors closed, trunk closed
...
+ Phase 2
Functional Diagram
Feature
Doors open Trunk closed
All openings open
Doors closed Trunk closed
Doors closed Trunk open
601
602
603
604
605
606
607
608
611
612
613
614
615
616
700
720
730
731
732
761
762
763
764
765
766
768
769
772

Fig. 7

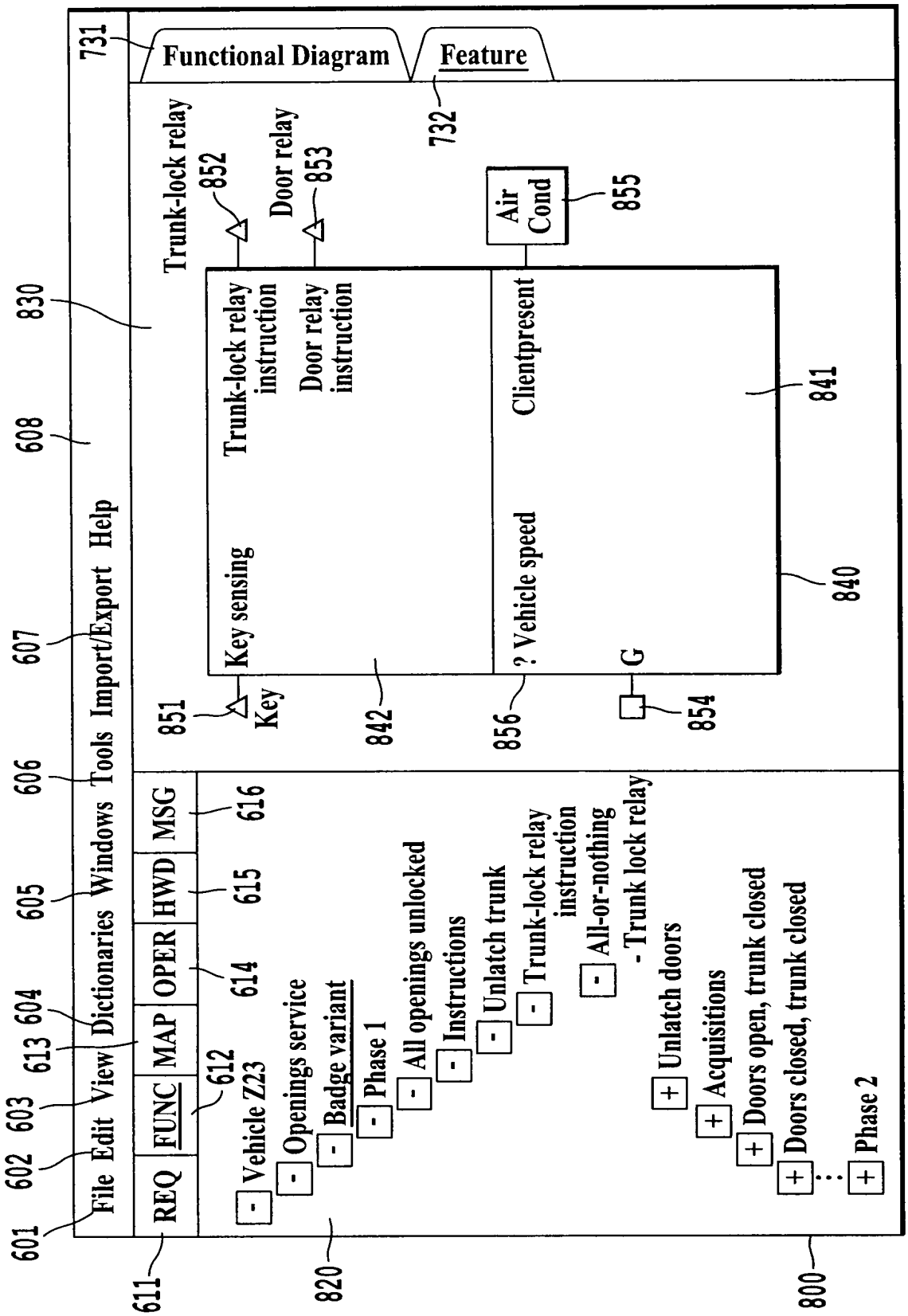

731
Functional Diagram
Feature
732
Trunk-lock relay
852
Door relay
853
Air Cond
855
830
608
607
606
605
604
613
603
602
601
File Edit View Dictionaries Windows Tools Import/Export Help
Trunk-lock relay instruction
Door relay instruction
Clientpresent
841
Key sensing
? Vehicle speed
840
851
Key
842
856
G
854
REQ
FUNC
MAP
OPER
HWD
MSG
616
615
614
612
- Vehicle Z23
- Openings service
- Badge variant
- Phase 1
- All openings unlocked
- Instructions
- Unlatch trunk
- Trunk-lock relay instruction
- All-or-nothing
- Trunk lock relay
+ Unlatch doors
+ Acquisitions
+ Doors open, trunk closed
+ Doors closed, trunk closed
+ Phase 2
611
820
800

Fig. 8

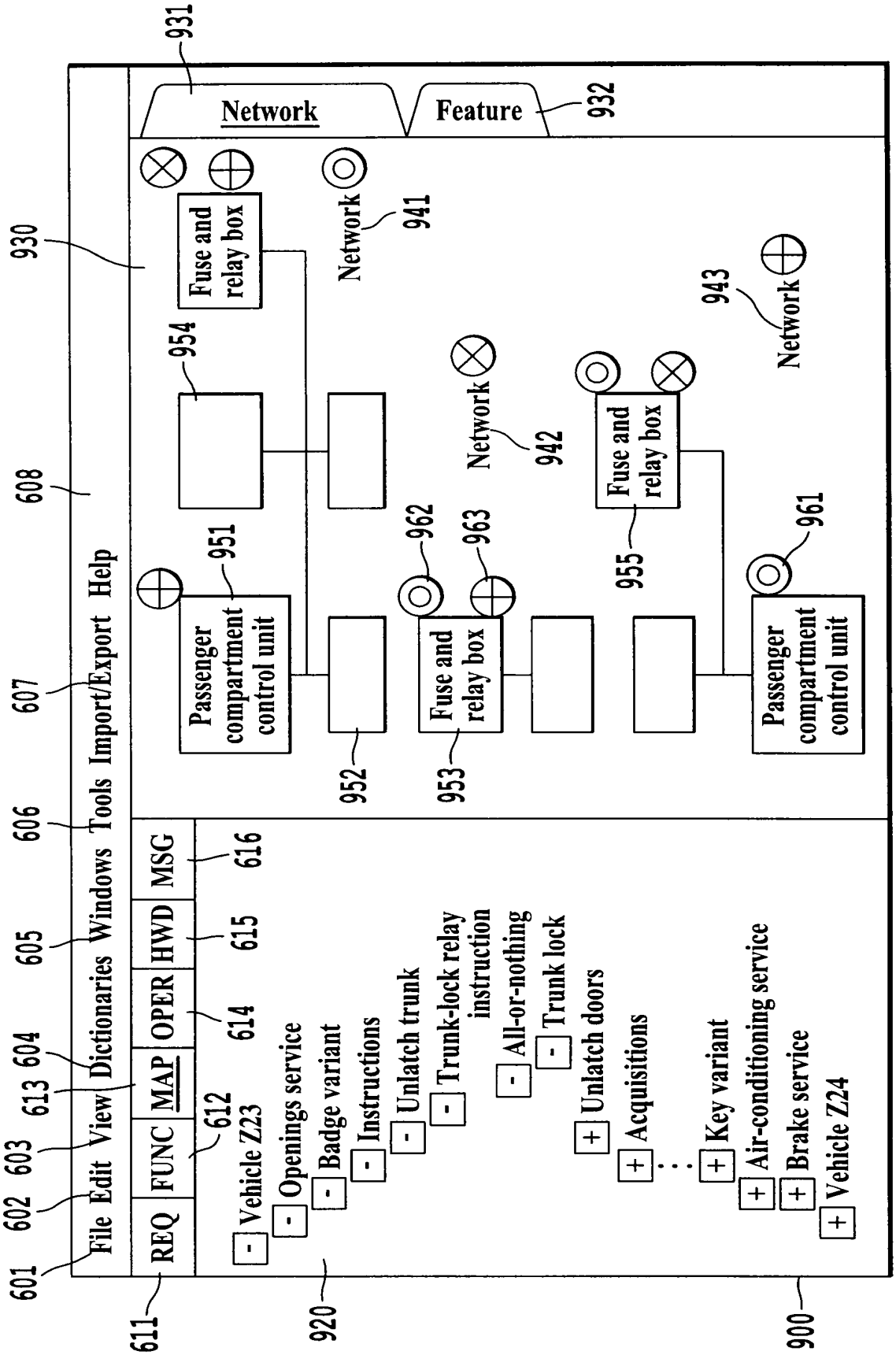

File Edit View Dictionaries Windows Tools Import/Export Help
REQ FUNC MAP OPER HWD MSG
Vehicle Z23
Openings service
Badge variant
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
Trunk lock
Unlatch doors
Acquisitions
Key variant
Air-conditioning service
Brake service
Vehicle Z24
Network
Feature
Fuse and relay box
Network
Network
Fuse and relay box
Network
Passenger compartment control unit
Fuse and relay box
Passenger compartment control unit
601
602
603
604
605
606
607
608
611
612
613
614
615
616
900
920
930
931
932
941
942
943
951
952
953
954
955
961
962
963

Fig. 9

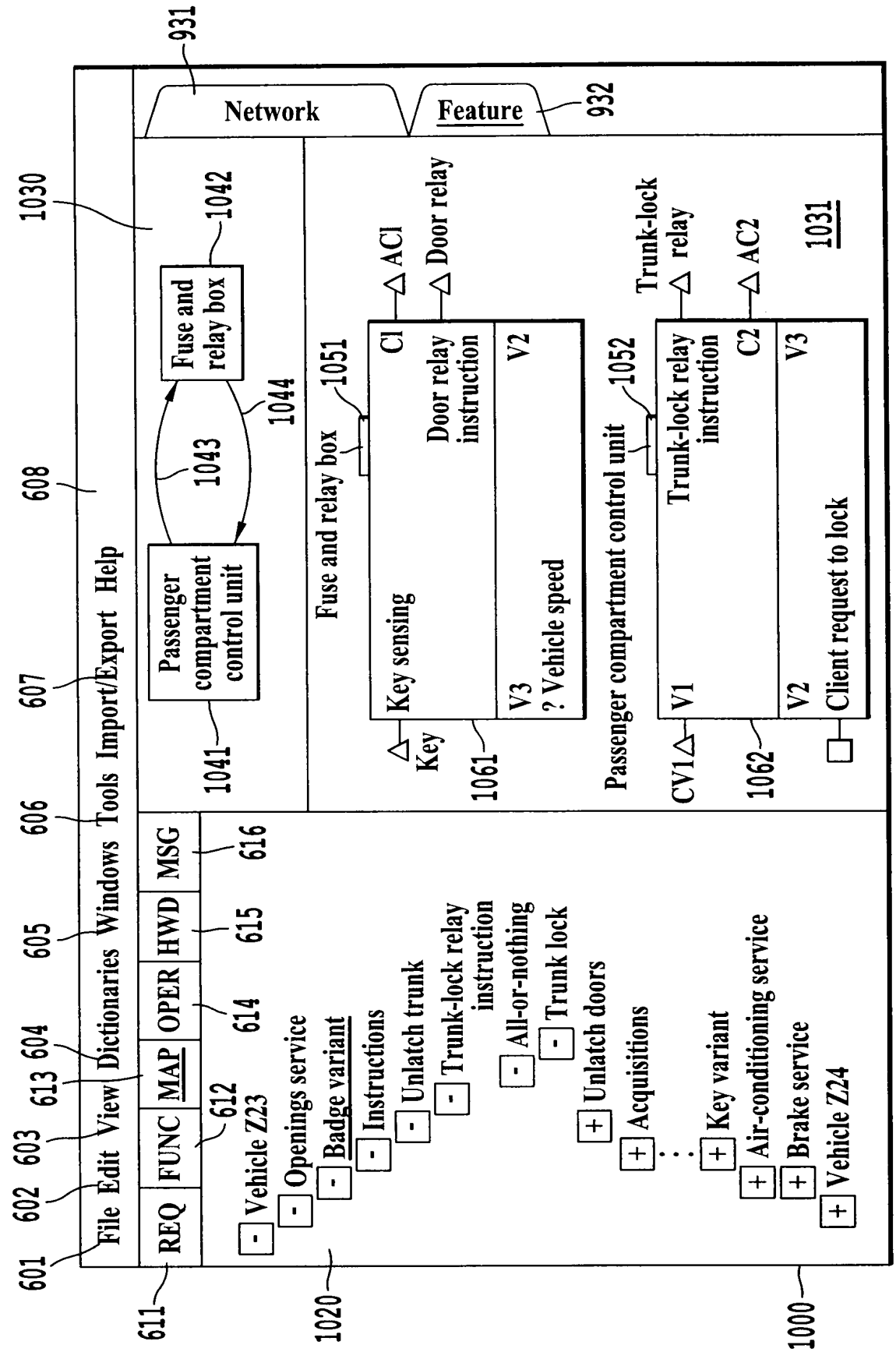

931
Network
Feature
932
1030
1042
Fuse and relay box
1043
1044
608
607
Passenger compartment control unit
1041
Fuse and relay box
1051
Cl
ACl
Door relay
Door relay instruction
V2
Key sensing
V3
? Vehicle speed
Key
1061
Passenger compartment control unit
1052
Trunk-lock relay
Trunk-lock relay instruction
AC2
C2
V3
1031
V1
V2
Client request to lock
CV1
1062
606
Tools
Import/Export
Help
File
Edit
View
Dictionaries
Windows
605
604
613
603
602
601
REQ
FUNC
MAP
OPER
HWD
MSG
612
614
615
616
Vehicle Z23
Openings service
Badge variant
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
Trunk lock
Unlatch doors
Acquisitions
Key variant
Air-conditioning service
Brake service
Vehicle Z24
611
1020
1000

Fig. 10

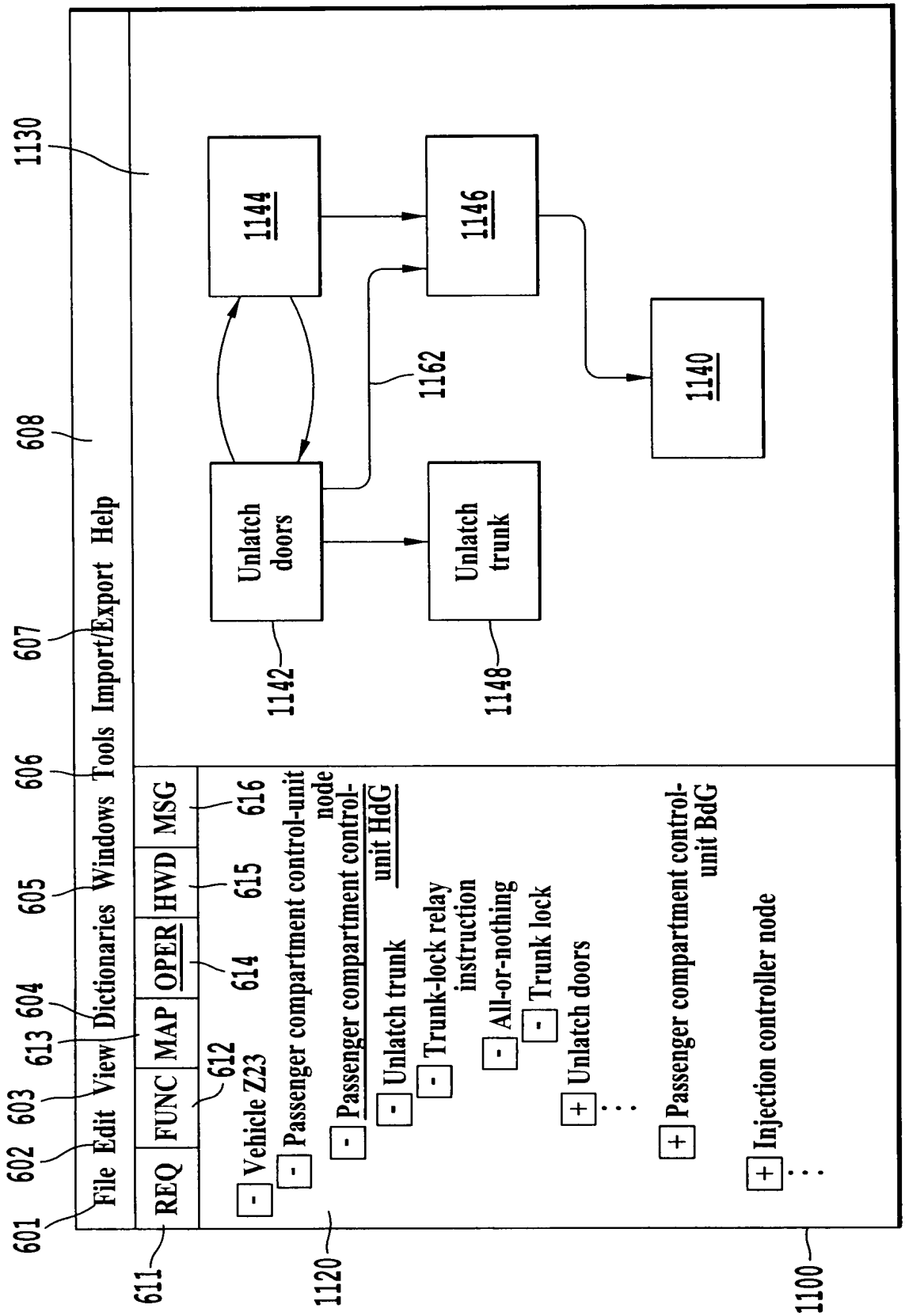

File Edit View Dictionaries Windows Tools Import/Export Help
REQ
FUNC
MAP
OPER
HWD
MSG
- Vehicle Z23
- Passenger compartment control-unit node
- Passenger compartment control-unit HdG
- Unlatch trunk
- Trunk-lock relay instruction
- All-or-nothing
- Trunk lock
+ Unlatch doors
+ Passenger compartment control-unit BdG
+ Injection controller node
Unlatch doors
Unlatch trunk
1144
1146
1140
1162
1142
1148
601
602
603
604
605
606
607
608
611
612
613
614
615
616
1100
1120
1130

Fig. 11

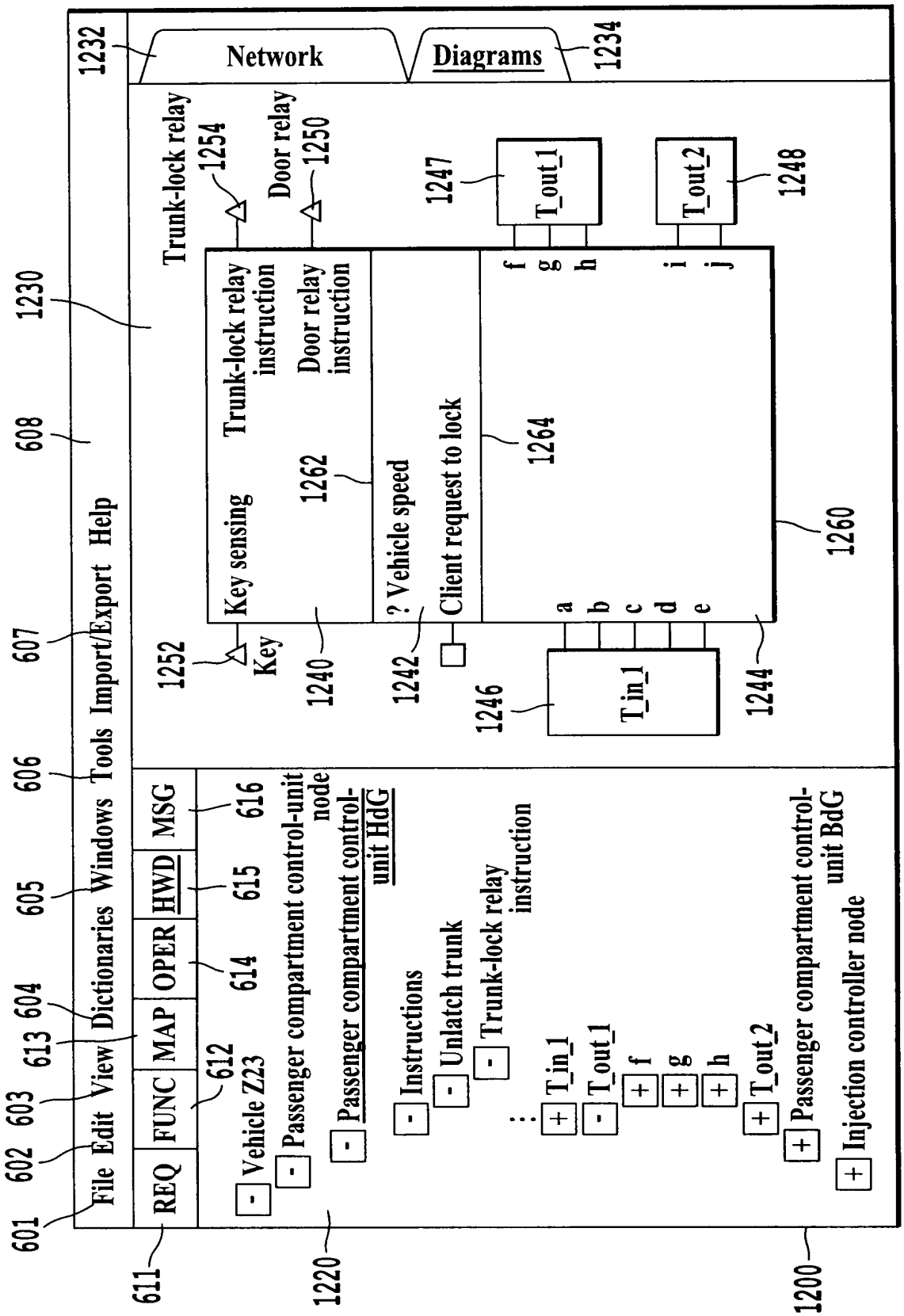

File Edit View Dictionaries Windows Tools Import/Export Help
REQ FUNC MAP OPER HWD MSG
- Vehicle Z23
- Passenger compartment control-unit node
- Passenger compartment control-unit HdG
- Instructions
- Unlatch trunk
- Trunk-lock relay instruction
+ T_in_1
- T_out_1
+ f
+ g
+ h
+ T_out_2
+ Passenger compartment control-unit BdG
+ Injection controller node
Network
Diagrams
Trunk-lock relay
Door relay
Key sensing
Trunk-lock relay instruction
Door relay instruction
? Vehicle speed
Client request to lock
Key
T_in_1
T_out_1
T_out_2
a
b
c
d
e
f
g
h
i
j
1200
1220
1230
1232
1234
1240
1242
1244
1246
1247
1248
1250
1252
1254
1260
1262
1264
601
602
603
604
605
606
607
608
611
612
613
614
615
616

Fig. 12

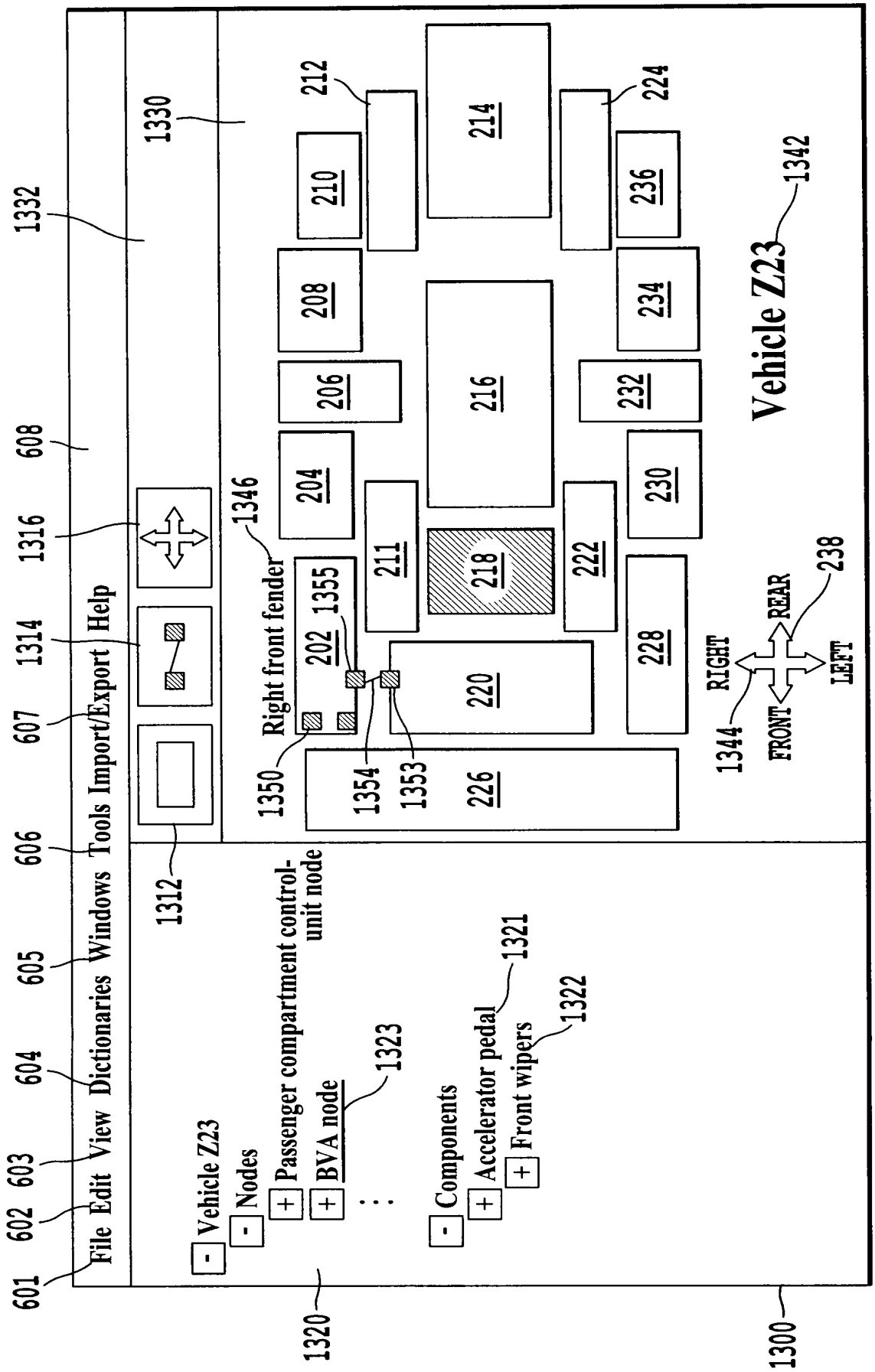

File Edit View Dictionaries Windows Tools Import/Export Help
601
602
603
604
605
606
607
608
1312
1314
1316
1320
1321
1322
1323
1330
1332
1342
1344
1346
1350
1353
1354
1355
Vehicle Z23
Right front fender
RIGHT
REAR
FRONT
LEFT
238
- Vehicle Z23
- Nodes
+ Passenger compartment control-unit node
+ BVA node
- Components
+ Accelerator pedal
+ Front wipers
202
204
206
208
210
211
212
214
216
218
220
222
224
226
228
230
232
234
236
1300

Fig. 13

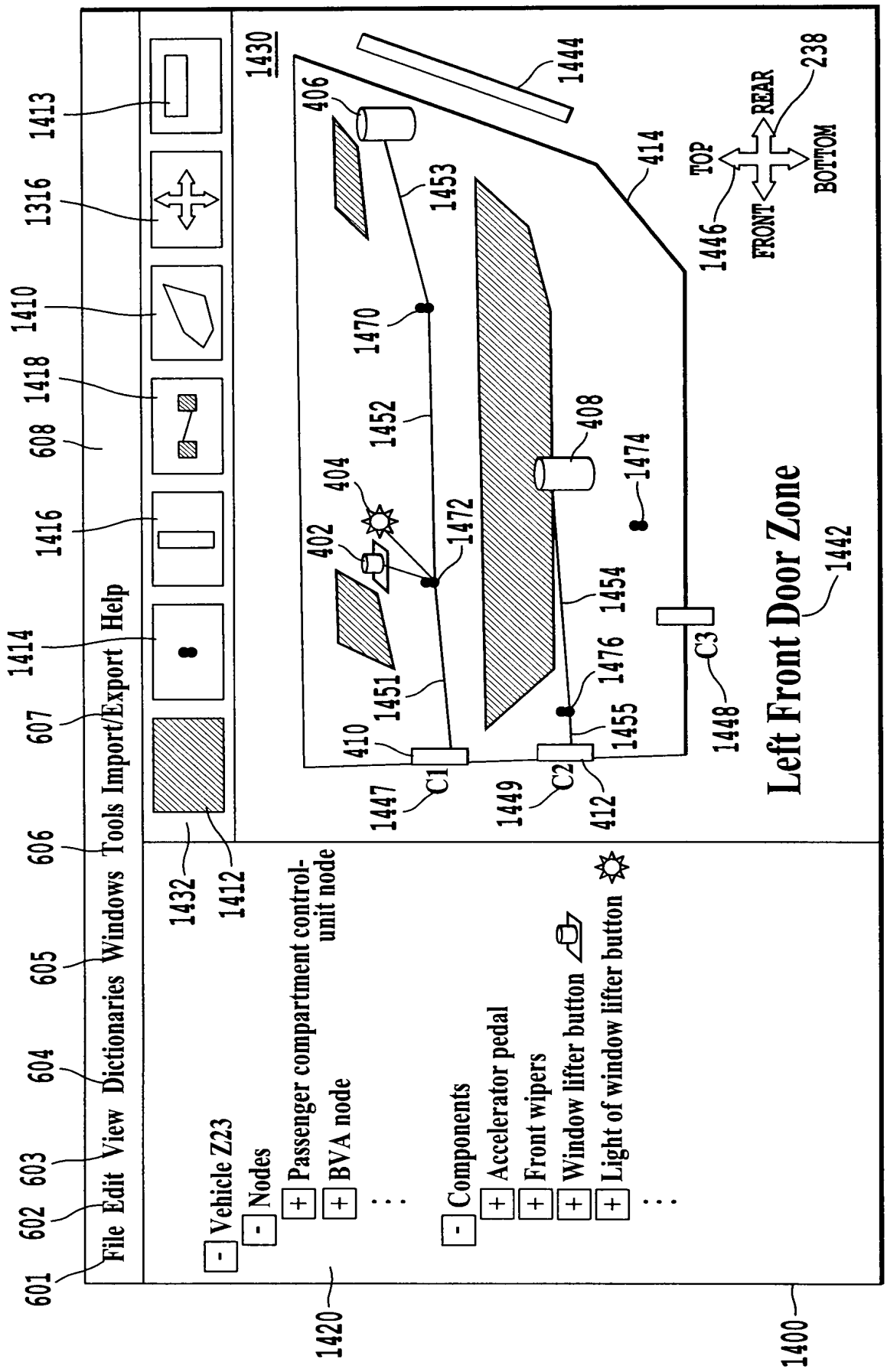

File Edit View Dictionaries Windows Tools Import/Export Help
Vehicle Z23
Nodes
Passenger compartment control-unit node
BVA node
Components
Accelerator pedal
Front wipers
Window lifter button
Light of window lifter button
Left Front Door Zone
TOP
REAR
FRONT
BOTTOM
C1
C2
C3
1400
1412
1414
1416
1420
1430
1432
1442
1444
1446
1447
1448
1449
1451
1452
1453
1454
1455
1470
1472
1474
1476
238
402
404
406
408
410
412
414
601
602
603
604
605
606
607
608
1410
1413
1418
1316

Fig. 14

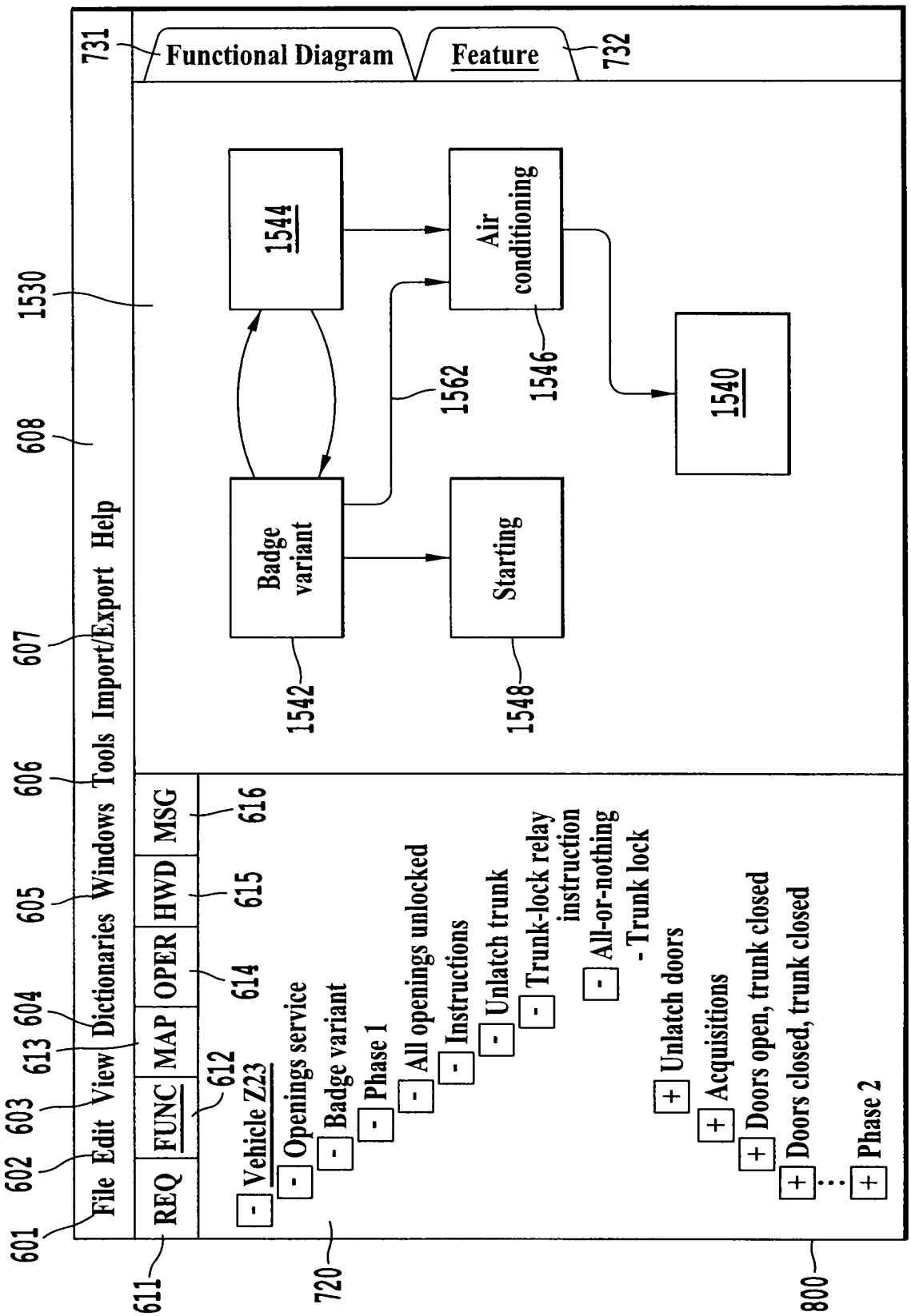

731
Functional Diagram
Feature
732
1530
608
607
606
605
604
613
603
602
601
File Edit View Dictionaries Windows Tools Import/Export Help
REQ
FUNC
MAP
OPER
HWD
MSG
612
614
615
616
611
720
800
- Vehicle Z23
- Openings service
- Badge variant
- Phase 1
- All openings unlocked
- Instructions
- Unlatch trunk
- Trunk-lock relay instruction
- All-or-nothing
- Trunk lock
+ Unlatch doors
+ Acquisitions
+ Doors open, trunk closed
+ Doors closed, trunk closed
...
+ Phase 2
1544
Air conditioning
1562
1546
1540
Badge variant
Starting
1542
1548

Fig. 15

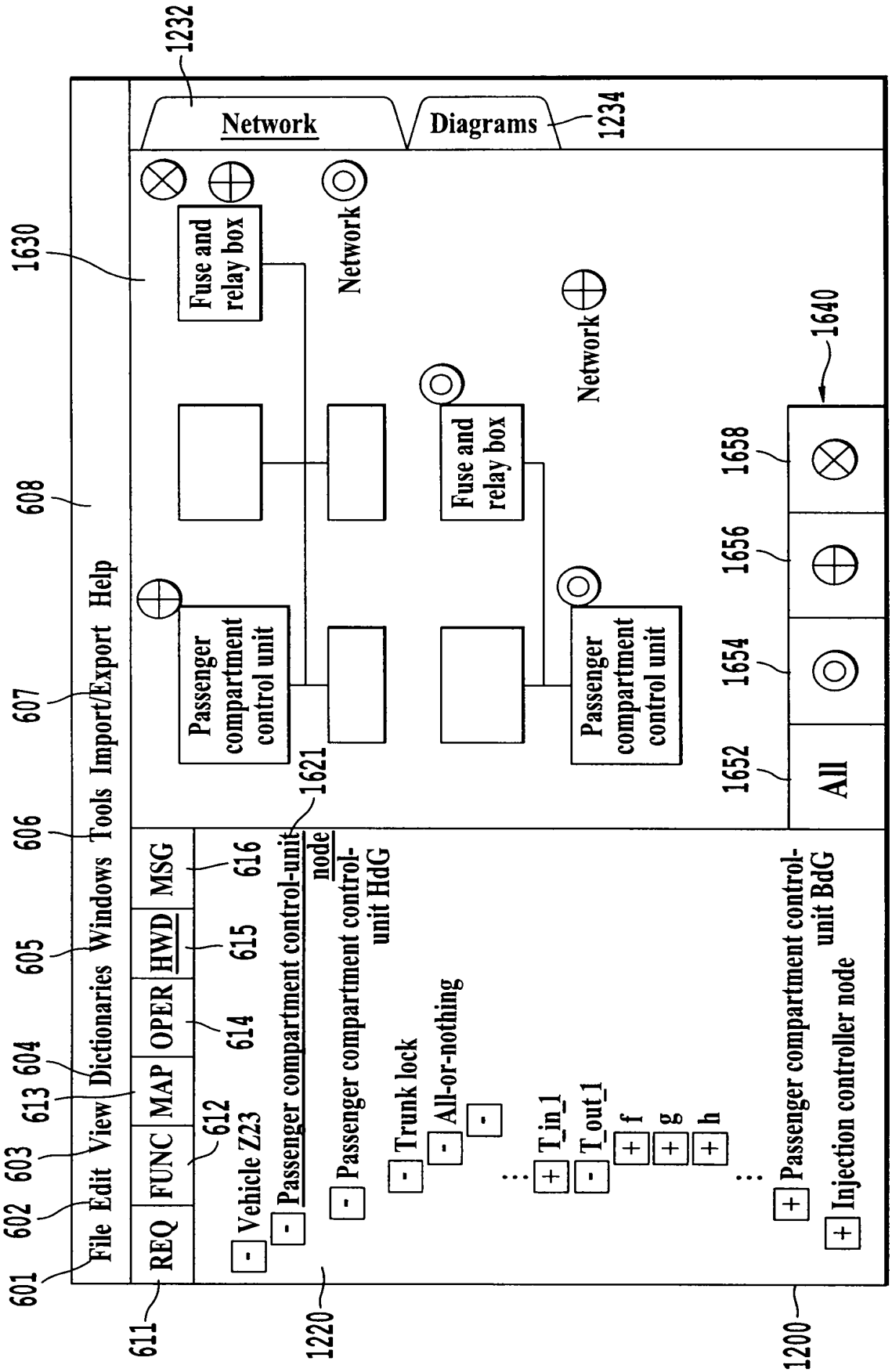

1232
Network
Diagrams
1234
1630
Fuse and relay box
Network
Network
Fuse and relay box
1640
1658
1656
1654
1652
608
607
606
605
604
613
603
602
601
File Edit View Dictionaries Windows Tools Import/Export Help
Passenger compartment control unit
1621
Passenger compartment control unit
All
REQ
FUNC
MAP
OPER
HWD
MSG
616
615
614
612
- Vehicle Z23
- Passenger compartment control-unit node
- Passenger compartment control-unit HdG
- Trunk lock
- All-or-nothing
-
T_in_1
T_out_1
+ f
+ g
+ h
+ Passenger compartment control-unit BdG
+ Injection controller node
611
1220
1200

Fig. 16

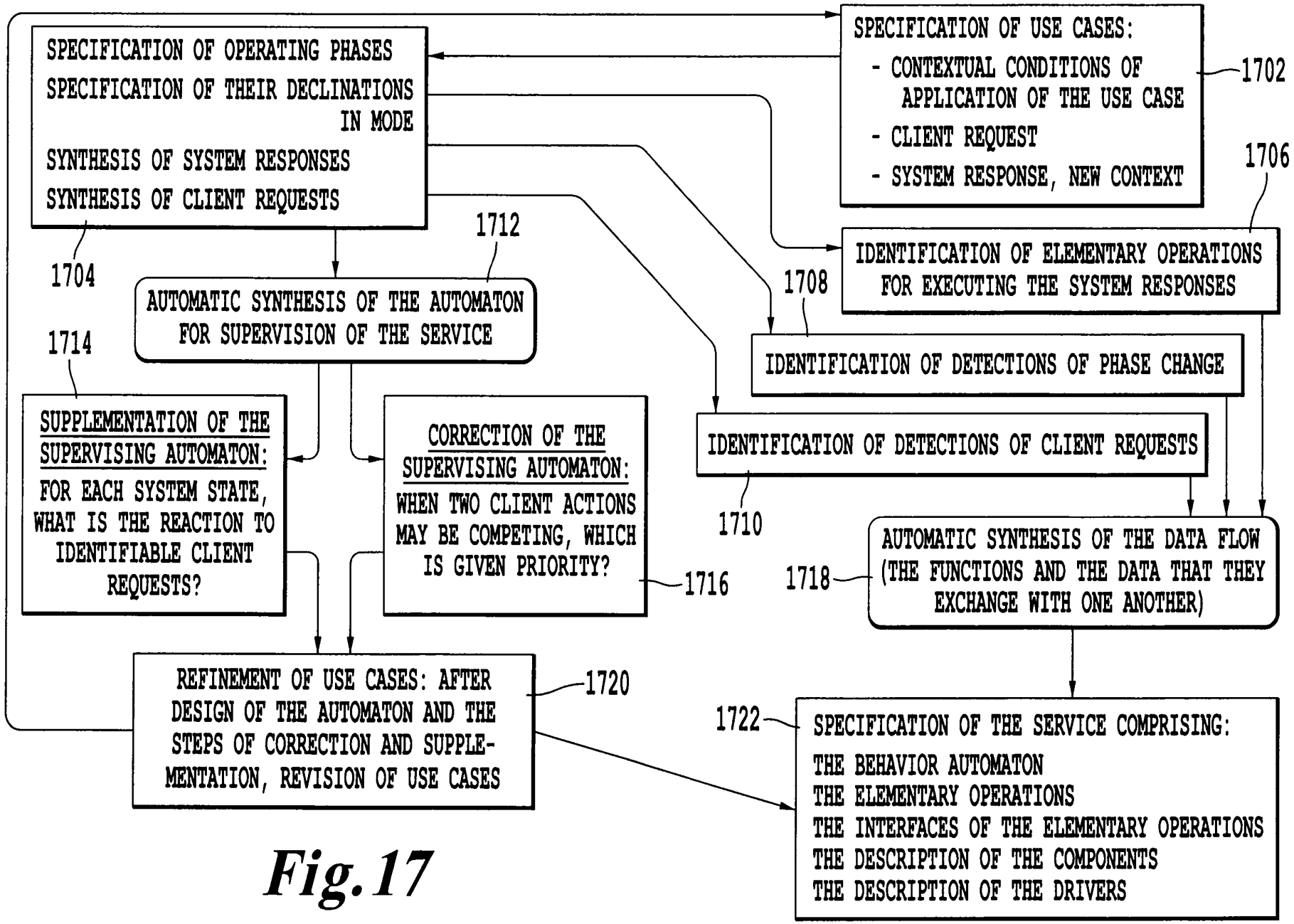

SPECIFICATION OF OPERATING PHASES
SPECIFICATION OF THEIR DECLINATIONS IN MODE
SYNTHESIS OF SYSTEM RESPONSES
SYNTHESIS OF CLIENT REQUESTS
1704
SPECIFICATION OF USE CASES:
- CONTEXTUAL CONDITIONS OF APPLICATION OF THE USE CASE
- CLIENT REQUEST
- SYSTEM RESPONSE, NEW CONTEXT
1702
1706
IDENTIFICATION OF ELEMENTARY OPERATIONS FOR EXECUTING THE SYSTEM RESPONSES
1712
AUTOMATIC SYNTHESIS OF THE AUTOMATON FOR SUPERVISION OF THE SERVICE
1708
IDENTIFICATION OF DETECTIONS OF PHASE CHANGE
1714
SUPPLEMENTATION OF THE SUPERVISING AUTOMATON:
FOR EACH SYSTEM STATE, WHAT IS THE REACTION TO IDENTIFIABLE CLIENT REQUESTS?
CORRECTION OF THE SUPERVISING AUTOMATON:
WHEN TWO CLIENT ACTIONS MAY BE COMPETING, WHICH IS GIVEN PRIORITY?
1716
IDENTIFICATION OF DETECTIONS OF CLIENT REQUESTS
1710
1718
AUTOMATIC SYNTHESIS OF THE DATA FLOW (THE FUNCTIONS AND THE DATA THAT THEY EXCHANGE WITH ONE ANOTHER)
REFINEMENT OF USE CASES: AFTER DESIGN OF THE AUTOMATON AND THE STEPS OF CORRECTION AND SUPPLEMENTATION, REVISION OF USE CASES
1720
1722
SPECIFICATION OF THE SERVICE COMPRISING:
THE BEHAVIOR AUTOMATON
THE ELEMENTARY OPERATIONS
THE INTERFACES OF THE ELEMENTARY OPERATIONS
THE DESCRIPTION OF THE COMPONENTS
THE DESCRIPTION OF THE DRIVERS

Fig.17

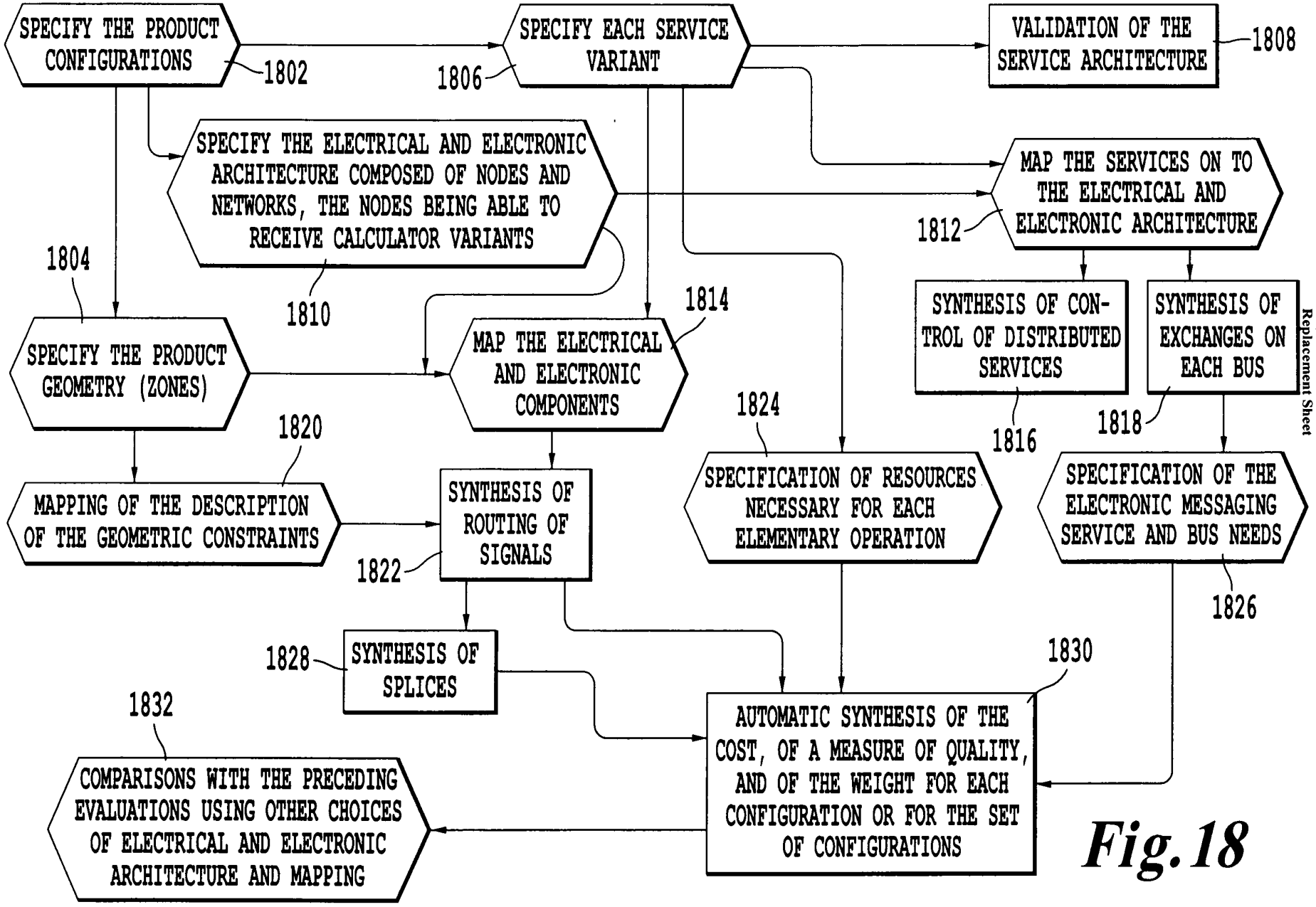


Fig. 18

OBLON, SPIVAK, et al
Docket No: 271243US41X PCT
Inventor: Samuel BOUTIN, et al.
Serial No: 10/532,105
Reply to OA dated: January 3, 2008
Replacement Sheet

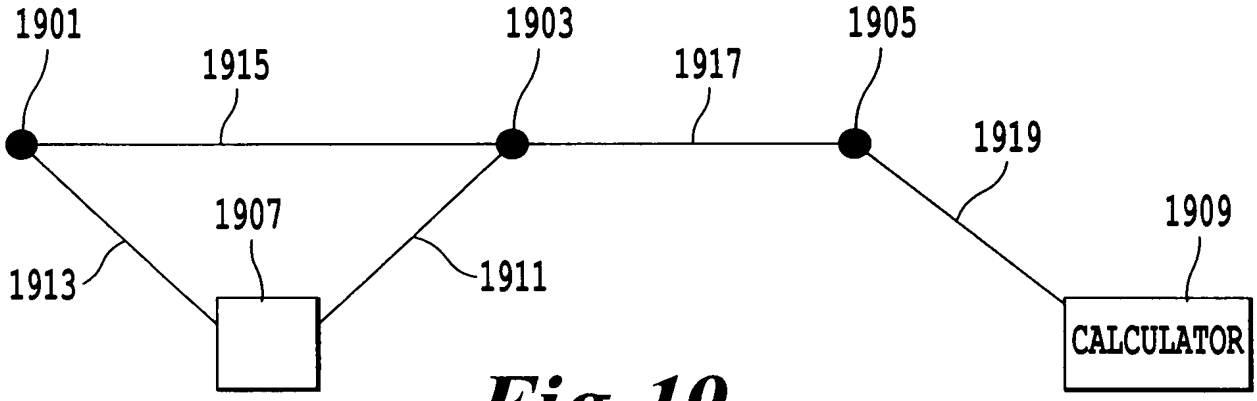


Fig. 19

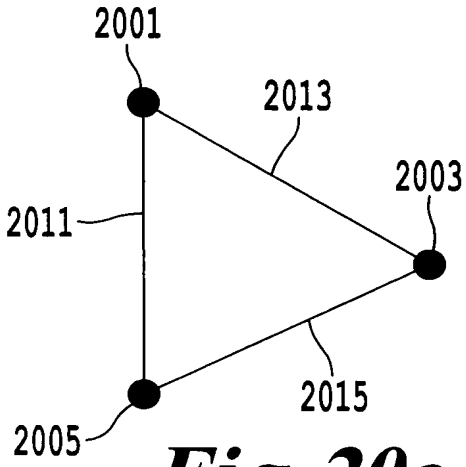


Fig. 20a

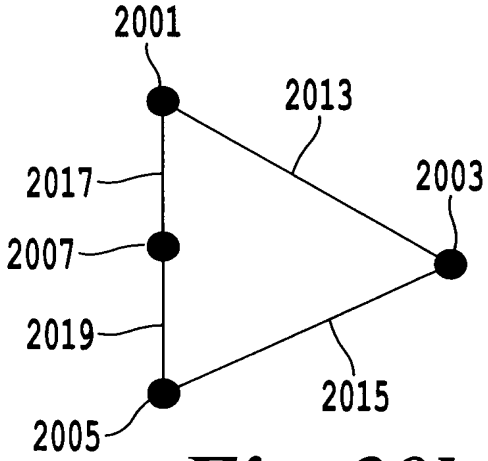


Fig. 20b

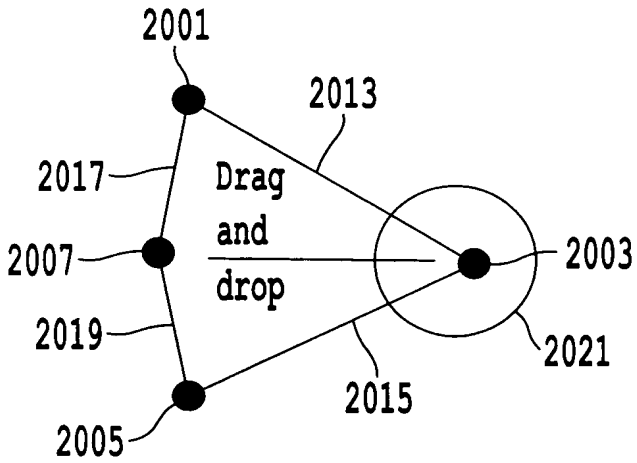


Fig. 20c

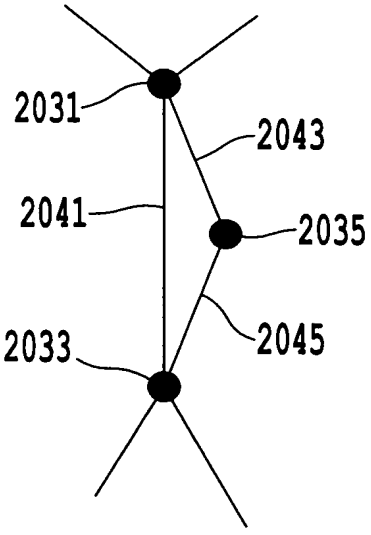


Fig. 20d